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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,348	10/25/2001	Paul Johnson		2884
7590	09/22/2004		EXAMINER	
Ross Patent Law Office P.O. Box 2138 Del Mar, CA 92014			PEREZ GUTIERREZ, RAFAEL	
			ART UNIT	PAPER NUMBER
			2686	9
DATE MAILED: 09/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/046,348	Johnson et al.
	Examiner	Art Unit
	Rafael Perez-Gutierrez	2686

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 24 May 2004.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-26 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-26 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 26 June 2002 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

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DETAILED ACTION

1. This Action is in response to Applicant's amendment filed on May 24, 2004. **Claims 1-26** are still pending in the present application. **This Action is made FINAL.**

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because it does not identify the citizenship of each inventor, specifically the citizenship of inventor Kenneth Y. Tang has not been identified.

Drawings

3. The drawings are objected to because of the following minor informality: On **figure 9**, replace "CASSAGRIN" with --CASSEGRAIN--.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference numbers mentioned in the description on **page 14 lines 16 and 16**: Reference numbers **714, 716, 718, and 720** are not shown on **figure 11**.

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5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference numbers not mentioned in the description: On **figure 2**, reference numbers **9R and 14R** are not mentioned in the description.

6. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended". If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the Examiner, the Applicant will be notified and informed of any required corrective action in the next Office Action. If a response to the present Office Action fails to include proper drawing corrections, corrected drawings or arguments therefor, the response can be held **NON-RESPONSIVE** and/or the application could be **ABANDONED** since the objections/corrections to the drawings are no longer held in abeyance.

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Specification

7. The disclosure is objected to because of the following informality: On **page 1**, replace the first paragraph with the following paragraph in order to provide the most current priority and related application information.

--This application is a continuation-in-part application of U.S. Patent Application Serial No. 09/847,629 filed May 2, 2001, now U.S. Patent No. 6,556,836 B2; U.S. Patent Application Serial No. 09/872,542 filed June 2, 2001, now abandoned; U.S. Patent Application Serial No. 09/872,621 filed June 2, 2001, now abandoned; U.S. Patent Application Serial No. 09/882,482 filed June 14, 2001, now U.S. Patent No. 6,665,546 B2; U.S. Patent Application Serial No. 09/952,591, filed September 14, 2001, now U.S. Patent No. 6,714,800 B2; and U.S. Patent Application Serial No. 09/965,875 filed September 28, 2001, all of which are incorporated herein by reference. The present invention relates to multiple beam antennas and specifically to such antenna used in communication systems.--

Appropriate correction is required.

Claim Objections

8. **Claims 1-5** are objected to because of the following informalities:

- a) On **line 7 of claim 1**, replace “condition,” with --conditions,--;
- b) On **lines 10 and 23 of claim 1**, insert --and-- after “less,--;
- c) On **line 16 of claim 1**, replace “system;and” with --system;--;

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- d) On line 19 of **claim 1**, replace “a” with --said-- before “first”; and
- e) On line 1 of **claims 2, 4, and 5** and on line 2 of **claim 3**, delete “tracking” before “dish antennas” in order to provide proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitations of “wherein said first tracking system is configured to *determine angle error by analysis of wave front signals or by analysis of amplitude modulation of signals* from said second transceiver and said second tracking system is configured to *determine angle error by analysis of wave front signals or by analysis of amplitude modulation of signals* from said first transceiver” in **lines 36-40**. These limitations are not described in the specification of the present application nor in the specification of any of the related applications that were incorporated by reference into the present application and Applicant has not pointed

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out where the amended claim is supported. Applicant is welcomed to point out where in the specification the Examiner can find support for the above-mentioned limitations if Applicant believes that the specification supports the limitations.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the Applicant regards as his invention.

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim 6 depends from **claim 1** and further recites the limitation of “greater than 57 GHz” on **line 3** for the transmit and receive frequency of operation of the first transceiver system, however, on **lines 31 and 32 of claim 1**, the transmit and receive frequency of operation of the first transceiver system has been defined to be within a frequency range **higher than 60 GHz** (emphasis added). Therefore, **claim 6** is considered to be indefinite since it is impossible to operated the first transceiver system on any transmit or receive frequency between the range of 57 GHz to 60 GHz when the range of operation has been already defined to be higher than 60 GHz. The Examiner suggests the cancellation of this claim.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

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obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. **Claims 1-9 and 15-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Foster, Jr. et al. (U.S. Patent # 6,016,313)** in view of **Kruger (U.S. Patent # 6,307,523 B1)**.

Consider **claims 1-9 and 26**, Foster, Jr. et al. show and disclose a point-to-point millimeter wave communication system (figure 1 and column 5 lines 31-35) comprising:

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a node 150, 151, or 152 (first millimeter wave transceiver system) (figures 1 and 4) located at a first stationary site 110, 120, or 130, respectively, capable of transmitting to a second stationary site 110, 120, or 130 through atmosphere digital information at rates in excess of 30 million bits per second (e.g., 1 billion bits per second) and receiving information from said second site 110, 120, or 130 at rates in excess of 30 million bits per second (e.g., 155 million bits per second) (column 2 lines 10-25 and 53-58), said node 150, 151, or 152 (first transceiver) comprising a dish antenna 420 (figure 4) producing a communication lobe (beam) having a beam width (half-power beam width) of approximately 2 degrees or less (e.g., 0.36 degrees) (column 15 lines 13-23); and

a node 150, 151, or 152 (second millimeter wave transceiver system) (figures 1 and 4) located at a second site 110, 120, or 130, respectively, capable of receiving from said first site 110, 120, or 130 digital information at rates in excess of 30 million bits per second (e.g., 155 million bits per second) and transmitting information at rates in excess of 30 million bits per second (e.g., 1 billion bits per second) (column 2 lines 10-25 and 53-58), said node 150, 151, or 152 (second transceiver) comprising a dish antenna 420 (figure 4) producing a communication lobe (beam) having a beam width (half-power beam width) of approximately 2 degrees or less (e.g., 0.36 degrees) (column 15 lines 13-23).

It is considered that the transmission and reception at rates in excess of 30 million bits per second in Foster, Jr. et al. occurs under any weather condition.

Foster, Jr. et al. also discloses that the system uses a carrier frequency in the millimeter wave-length frequency spectrum (i.e., extremely high frequency (EHF)) (column 2 lines 53-55,

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column 5 lines 18-22, and column 15 lines 15-23).

Therefore, it would have been clearly obvious to a person of ordinary skill in the art at the time the invention was made to slightly modify the system of Foster, Jr. et al. to specifically operate the system at frequencies greater than 57 GHz, 60 GHz, or 90 GHz or in the range of 92-95 GHz (e.g., transmit at 92.3-93.2 GHz, receive at 94.1-95.0 GHz) since these frequencies are extremely high and they fall in the millimeter wave-length frequency spectrum.

However, Foster, Jr. et al. do not specifically disclose that each of the nodes comprise a tracking system comprising a modified version of a radar tracking system chosen from a group of tracking systems consisting of a monopulse tracking system, a conical scan tracking system, or a sequential lobing tracking system, wherein said tracking system is configured to determine angle error by analysis of wave front signals or by analysis of amplitude modulation of signals from the other node.

In the same field of endeavor, Kruger clearly show and disclose as well known in the art the use of a tracking system, such as, a monopulse tracking system, a conical scan tracking system, or a sequential lobing tracking system, in RF communications (e.g., millimeter wave communications) to determine angle error by analysis of wave front signals in order to align an antenna with a zero angle error (column 1 lines 15-54).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the tracking system taught by Kruger into the system of Foster, Jr. et al. in order to align an antenna with a zero angle error.

Consider **claims 15-18, and as applied to claim 1 above**, Foster, Jr. et al., as modified by

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Kruger, clearly disclose that the first site 110, 120, or 130, and the second site 110, 120, or 130 are separated by a significant physical distance (column 1 lines 12-16 and 61-64 and column 5 lines 31-35), consequently, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to slightly modify the system of Foster, Jr. et al. to specifically operate the system between sites that are at least 1, 2, 7, or 10 miles apart.

Consider **claim 19**, and as applied to **claim 1 above**, although Foster, Jr. et al., as modified by Kruger, only disclose bit error ratios of 10^{-6} for purposes of modulation (column 19 lines 13-23), a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the teachings of Foster, Jr. et al. to transmit and receive information at bit error ratios of less than 10^{-10} in order to ensure that the available spectrum is efficiently used.

Consider **claims 20-25**, and as applied to **claim 1 above**, Foster, Jr. et al., as modified by Kruger, clearly disclose that the nodes 150, 151, and 152 are equipped with a parabolic dish antenna (e.g., prime focus or offset parabolic antenna) providing 42 dB of gain (column 15 lines 16-18). Although, Foster, Jr. et al. do not specifically disclose that the antenna provides a gain greater than 45 dB or 50 dB, a person of ordinary skill in the art at the time the invention was made would have clearly recognized that antennas providing such gain can be used in the system of Foster, Jr. et al. without significantly altering the layout of the system.

Response to Arguments

13. Applicant's arguments with respect to **claim 1** have been considered but are moot in view

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of the new ground(s) of rejection.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any response to this Office Action should be **faxed to (703) 872-9306 or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

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220 S. 20th St.
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

16. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Rafael Perez-Gutierrez whose telephone number is (703) 308-8996. The Examiner can normally be reached on Monday-Thursday from 6:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Marsha D. Banks-Harold can be reached on (703) 305-4379. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700 or call customer service at (703) 306-0377.


Rafael Perez-Gutierrez
R.P.G./rpg **RAFAEL PEREZ-GUTIERREZ**
 PATENT EXAMINER

September 20, 2004